MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

DCS5268 – COMPUTER PROGRAMMING

(Diploma in Electronic Engineering)

18 OCTOBER 2019
3:00 p.m.– 5:00 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 5 pages with **4** questions.
2. Answer **ALL** questions.
3. Please write all your answers in the Answer Booklet provided.

QUESTION 1 (25 Marks)

a. What is a flow chart? Draw the **flowchart** to implement the following grading policy for the exam processing system of an educational institution. The system has to verify whether the mark entered is valid. Any mark in the range of 0 to 100 is valid. The total number of students to be processed is given by the user.

[15 marks]

Subject Mark	Grade
80 and above	A
70 to 79	B
60 to 69	C
50 to 59	D
Below 50	F

b. Write the **pseudocode** for the grading policy mentioned above in Question 1 (a).

[10 marks]

QUESTION 2 (25 Marks)

a. Write the output of the following C program.

[5 marks]

```
#include<stdio.h>
int main()
{
        int x = 9, y = 2, z = 0;
        z=x%y;
        printf("\n z=%d",z);
        z=x/y;
        printf("\n z=%d",z);
        z=z+x*y;
        printf("\n z=%d",z);
        z=++x;
        printf("\n z=%d",z);
        z=y++;
        printf("\n z=%d",z);
        return 0;
}
```

Continued...

b. What is the output of the following C program?

```
#include <stdio.h>
int main ( )
{
  int i = 555;
  float f = 456.12378;
  char s[ ] = "Bon Voyage";
  printf("%.5d\n", i);
  printf("%.3f\n %.3e\n %.3g\n", f, f, f);
  printf("%.7s\n",s);
  return 0;
}
```

[5 marks]

c. Write a complete C program to receive the weight in kilograms and height in meters from the user and to calculate & display the body mass index (BMI) with suitable message as per the following formula and table.

BMI (kg/m^2) = weight / (height x height)

BMI	Weight Status
Below 18.5	Underweight
18.5 -24.9	Normal
25 - 29.9	Overweight
30 & Above	Obese

The program has to be executed as long as the user wants to continue.

[15 marks]

QUESTION 3 (25 Marks)

a. When do you use array? Write a complete C program to declare a suitable array to store the following readings taken from a scientific experiment.

0.5	0.8	0.0	-0.9	0.4	0.0	-0.4	0.6	0.4	-0.1	0.7	-0.3

The program has to count the number of positive, negative and zero readings to produce the following output.

```
Type of reading    Count   Percentage
Positive             6       50.00
Negative             4       33.33
Zeros                2       16.67
```

[10 marks]

Continued...

b. The information in Table 1 below is an example of student information. Recommend a suitable data type to store these information. Write a C program to receive such information for 30 students and count the number of students with cgpa 3 and above.

[10 marks]

Student Name	ID	SEX	CGPA
Raja	10010400	m	3.23
Rani	10010401	f	2.82
Prince	10010403	m	2.90
Princes	10010404	f	3.50
....	....	...	....

Table 1: Student Info

c. Write a complete C program that checks whether a given string is palindrome. A palindrome is a word that reads the same reads the same backwards as forwards. For example, MADAM can be read the same in both directions.

[5 marks]

Sample output:

```
Enter a string: MADAM
PALINDROME
```

```
Enter a string: MMU
NOT A PALINDROME
```

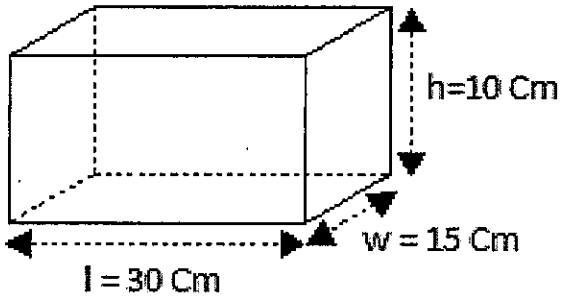
Continued...

QUESTION 4 (25 Marks)

a. Explain the difference between pointer variable and ordinary variable. Write the appropriate C code needed to do the following activities
   i. Declare a variable x and initialize it with integer value 50.
   ii. Declare a pointer capable of pointing variable x.
   iii. Enable the pointer to point variable x.
   iv. Print the value of x using the pointer p.
   v. Increment the value of x using the pointer p.

[6 marks]

b. Given below is the formula for calculating the surface area of a box.
Area of a box = 2 x [(w x l) + (l x h) + (h x w)],
Where l = length, w = width, and h = height.
Design a user defined C function to find the surface area of any box. Your function should accept the values for width, height and length of the box as input parameters and return the calculated area.
Write a function call to calculate the area of the following box.



Write a main function to calculate the surface area of a similar box of any dimension.

[10 marks]

c. The following file staff_list.txt is used to store the details of the employees working in a college. The Human Resource Department of that college wants to have two separate files one with details of male employees and another with details of female employees. Write a C program to separate the records in the following file into two files according to the requirement of the Human Resource Department. The total number of records in the staff_list.txt file is unknown.

Sample data for staff_list.txt file

Name	ID No.	Sex	Designation
Abraham	1001	M	Professor
Jothi	1003	F	Senior Lecturer
Ibrahim	1005	M	Lecturer
Kim	1004	F	Senior Lecturer
...	...	...	...
...	...	...	...

[9 marks]

End of Paper